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INDEPENDENT STATE AUDITOR'S REPORT ON CERTAIN ACTIVITIES OF THE MASSACHUSETTS TURNPIKE AUTHORITY'S CENTRAL ARTERY/THIRD HARBOR TUNNEL MANAGEMENT CONTINGENCY OCTOBER 1, 2001 THROUGH MARCH 31, 2002

OFFICIAL AUDIT REPORT

JULY 22, 2002

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The Central Artery/Third Harbor Tunnel (CA/T) Project is a major 7.5-mile interstate highway project designed to significantly reduce traffic congestion in downtown Boston through the construction of an eight- to 10-lane underground Central Artery, a four-lane underwater tunnel that crosses Boston Harbor, and a commercial traffic bypass road through South Boston. CA/T Project construction began in 1991 and was 81% complete as of June 30, 2002. Construction extends from the I-93 Massachusetts Avenue Interchange on the south to beyond the Leonard P. Zakim Bunker Hill Bridge over the Charles River on the north, and from the Turnpike interchange by the Fort Point Channel on the west under Boston Harbor via the Ted Williams Tunnel to Logan International Airport and Route 1A in East Boston.

In 1989, CA/T Project management estimated that the project, as then configured, would cost $4.4 billion and would be completed in 1998. The project's cost estimate and completion date has been the subject of some controversy over the years due to the number of revisions made to these estimates. Most recently, in the October 1, 2001 Finance Plan, CA/T Project officials revised the total estimated cost of the project to $14.475 billion based upon a recent comprehensive cost schedule update known as CSU 8. In March 2002, project officials announced that the federal Department of Transportation's Inspector General's Office had mandated an accounting adjustment of $150 million. Although the adjustment requires no additional funding, its effect was to increase the total estimated project costs to $14.625 billion.

This interim report reviewed the adequacy and reasonableness of the CA/T Project's multi-million dollar Management Contingency budget. To date, the OSA's 16 interim reports have identified $546 million in unnecessary, excessive, and avoidable project costs as well as available savings opportunities.

Our audit revealed that a major component of the Central Artery/Third Harbor Tunnel (CA/T) Management Contingency budget earmarked to settle potential construction contractor claims against the project is overfunded by approximately $86 million. Despite historical claims settlement experience to the contrary, the project's current funding strategy will require the Commonwealth to incur bond interest costs of approximately $88 million to fund this excess Management Contingency capacity.

INTRODUCTION

Background

The Central Artery/Third Harbor Tunnel (CA/T) Project is a major 7.5-mile interstate highway project designed to significantly reduce traffic congestion in downtown Boston through the construction of an eight- to 10-lane underground Central Artery, a four-lane underwater tunnel that crosses Boston Harbor, and a commercial traffic bypass road through South Boston. CA/T Project construction, which began in 1991, was 81% complete as of June 30, 2002. Construction extends from the I-93 Massachusetts Avenue Interchange on the south to beyond the Leonard P. Zakim Bunker Hill Bridge over the Charles River on the north, and from the Turnpike interchange by the Fort Point Channel on the west under Boston Harbor via the Ted Williams Tunnel to Logan International Airport and Route 1A in East Boston.

In 1984, the Massachusetts Highway Department (MHD) awarded a management consultant contract to the joint venture of Bechtel/Parsons Brinckerhoff (B/PB) to manage project design and construction activities. The management consultant has responsibility for program management, preliminary design, final design management, procurement, construction management, and environmental services. The Massachusetts Turnpike Authority (MTA) assumed ownership and management of the CA/T Project under state law enacted in March 1997.

In 1987, the United States Congress passed the Surface Transportation and Uniform Relocation and Assistance Act, which made the CA/T Project eligible for a maximum of 90% federal reimbursement, depending upon the roadway classification and the availability of funds, with the Commonwealth bearing the remaining costs. In 1991, Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA), which extended the federal government's financial support of the project through 1997. In January 1998, Congress passed the Transportation Equity Act for the 21ST Century (TEA-21). Under this legislation, Massachusetts will receive federal funding through fiscal year 2003. Subsequently, fiscal year 2001 federal legislation capped federal funding for the project at $8.549 billion.

In 1989, CA/T Project management estimated that the project, as then configured, would cost $4.4 billion and would be completed in 1998. The project's cost estimate and completion date has been the subject of some controversy over the years due to the number of revisions made to these estimates. Most recently, in the October 1, 2001 Finance Plan, CA/T Project officials revised the total estimated cost of the project to $14.475 billion based upon a recent comprehensive cost schedule update known as CSU 8. In March 2002, project officials announced that the federal Department of Transportation's Inspector General's Office had mandated an accounting adjustment of $150 million. Although it requires no additional funding, its effect was to increase the total estimated project costs to $14.625 billion.

This interim report reviewed the adequacy and reasonableness of the CA/T Project's multi-million dollar management contingency budget. To date, the OSA's 16 interim reports have identified $546 million in unnecessary, excessive, and avoidable project costs as well as available savings opportunities.

Project's Management Contingency

As previously stated, the October 1, 2001, CA/T Project Finance Plan estimated the total cost of the project to be $14.475 billion. Included in this estimate is $494 million for management contingencies. According to project documents, the contingency value was determined using a cost/risk analysis approach in which major areas of risk were identified and quantified. The major areas of risk included: risks related to particular scope or contract elements, schedule extension related impacts, competitive marketplace unknowns that may affect the pricing of remaining unawarded contracts, unanticipated Right of Way court-ordered settlements, an allowance for unknowns such as project scope changes and contractor claims pricing, and potential settlement variances.

The components of the project's Management Contingency are described below:

- <u>Contract Specific Contingency</u>: The Contract Specific Contingency element of the Management Contingency is budgeted for a total of $29 million. The purpose of this component is to cover potential increased costs for both construction-related and non-construction-related events that have been identified but whose occurrence cannot be predicted with any degree of certainty.

- Market Discount Risk: The Market Discount Risk component of the Management Contingency is budgeted for a total of $12 million. Its purpose is to provide funding for contract awards that exceed the project's market discount factor.

- Project Schedule: The Project Schedule segment of the Management Contingency is budgeted for a total of $91 million. Its purpose is to cover both the construction-related and non-construction-related costs incurred as the result of schedule delays or accelerations that were anticipated at the time of the preparation of the current budget.

- External Factors: The External Factors component of the Management Contingency is budgeted for a total of $25 million. It is to be used for future unanticipated costs such as increased security and insurance premium costs that may be incurred but were not known at the time of the CSU 8 budget preparation.

- Modification Review Resources: The Modification Review Resources element of the project's Management Contingency is budgeted for a total of $5 million. Its intended use is to fund the increased costs associated with transferring control of the claims review process from the Management Consultant(B/PB) to CA/T Project staff and consultants.

- MTA CEO Contingency: The Massachusetts Turnpike Authority's Chief Executive Officer's (MTA CEO) Contingency is budgeted for a total of $97 million. This component of the Management Contingency is under the direct control of the MTA CEO and may not be used by the CA/T Project without express permission.

- DRB Exposure: The DRB (Dispute Review Board) Exposure component of the Management Contingency is budgeted for $235 million, or approximately 48% of the total Management Contingency amount. Its purpose is to provide coverage for contractor claims that are settled for more than the project's assessment of the acceptable cost for a particular claim, or group of claims associated with a specific contract.

The subject matter of this report is the DRB Exposure component of the Management Contingency.

In addition, the project has summarized the $494 million Management Contingency into the following categories of risk: the Construction Contingency, for costs directly associated with construction; the Other Contingency, used for non-construction cost centers; and the MTA CEO Contingency. These categorizations are presented in Appendix I.

The CA/T Project's Management Contingency had a remaining balance of $412.1 million as of March 31, 2002. See Appendix II for an analysis of the Management Contingency by component.

Audit Scope, Objectives, and Methodology

Our audit, which is ongoing, included an examination of the adequacy and reasonableness of a multi-million dollar component of the CA/T Project's Management Contingency budget. The objectives of our audit were to determine whether the CA/T Project's management activities (a) complied with applicable laws and regulations and (b) resulted in effective, economical, and efficient utilization of resources. In order to accomplish these objectives, we employed several audit tests and procedures during our examination. We reviewed applicable laws, regulations, and internal operating policies and procedures and interviewed project personnel. In addition, we reviewed contracts, cost records, correspondence files, and other documents, as necessary. Our examination was made in accordance with applicable generally accepted government auditing standards for performance audits.

AUDIT RESULTS

OVERFUNDING OF THE PROJECT'S MANAGEMENT CONTINGENCY BY $86 MILLON INFLATES TOTAL ESTIMATED PROJECT COST AND WILL INCREASE STATE BORROWING COSTS BY UP TO $88 MILLION

Our audit revealed that a major component of the Central Artery/Third Harbor Tunnel (CA/T) Management Contingency budget earmarked to settle construction contractor claims against the project is overfunded, thus overstating the total estimated cost of the project by $86 million. Moreover, the project's plan to fund this excess Management Contingency capacity, which runs counter to historical claims settlement experience, will require the Commonwealth to incur unnecessary bond interest costs of approximately $88 million.

Project Funding Available to Cover Issues, Claims and Contract Modifications

The CA/T Project's current $14.625 billion project estimate includes $494 million as a Management Contingency[1]. Included in this amount is a Dispute Review Board (DRB) Exposure component of $235 million. The primary purpose of this component of the Management Contingency is to budget funds, in addition to those already budgeted, for the purpose of mitigating claims exposure in the settlement of construction contractor claims against the project. Approximately $218 million of this amount remains available. Moreover, included in the project's CSU 8 construction budget is an additional $228 million as of March 2002 that is also available to settle contractor claims, bringing the total amount available to settle contractor claims to $446 million. An additional amount of $262 million, referred to as Future Allowance, is also available to cover yet to be identified issues and claims on current and future CA/T Project contracts.

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[1] The CA/T Project's $494 million Management Contingency consists of the following components and their corresponding amounts: (a) Contract Specific Contingency - $29 million; (b) Market Discount Risk - $12 million; (c) Project Schedule - $91 million; (d) External Factors - $25 million; (e) Modification Review Resources - $5 million; (f) MTA CEO Contingency - $97 million; and (g) DRB Exposure - $235 million.

DRB Exposure Component to the Management Contingency Is Unsupported

To compute the $235 million DRB Exposure component for claims coverage, the project included an amount referred to as the "mutual settlement agreement amount," which represents the expected settlement amount for the outstanding claims associated with each contract. According to project officials, this reference is a misnomer in that these amounts have not been formally negotiated or agreed upon. Although these amounts are critical in the computation of the $235 million DRB Exposure amount, project officials could not provide us with any written engineering estimates or other documentation to support the values used. This lack of documentation undermines the integrity of the DRB Exposure computation, which is the largest component (48%) of the Management Contingency, and the ability of third parties to determine the soundness of the project's calculation.

Historical Project Experience Settling Contractor Claims

Our examination of CA/T Project data on the settlement of over $2.9 billion in past contractor-proposed claims revealed that the project settled these claims for a total of $1.4 billion, or 49.4% of the contractors' proposed amounts. Our analysis indicates that, after settling all outstanding claims, issues and contract modifications at the CA/T Project's historical settlement rate and allowing for certain other adjustments, approximately $86 million of the DRB Exposure component of the Management Contingency will be in excess of project requirements. The following schedule summarizes our computation of the excess funding capacity to cover outstanding claims.

Calculation of Funds Needed to Cover Outstanding Claims*

(in millions)

Funds Needed for Claims:	
Contractor-Proposed Claims (per CA/T CSU 8 Budget)	$1,300
Settlements to Date (March 2002)	(653)
Remaining Contractor-Proposed Claims to Be Settled	$ 647
Historical Settlement Rate	49.4%
Estimated Claims to be Settled	$320
Add: Allowance for Unawarded Contract Claims	40
Total Estimated Claims Funding Needed	$360
Funds Available for Claims:	
DRB Exposure Component of Management Contingency	$218
Amount Included in Contract Budget for Claims (March 2002)	228
Total Funds Available for Claims	$446
Estimated Excess Funds	$ 86

* As of March 31, 2002, an additional $262 million, referred to as Future Allowance, is available to cover yet-to-be identified (future) issues and claims.

Project Management Contingency Cash Flow

The CA/T Project's October 2001 Finance Plan indicates the cash flow of the $494 million Management Contingency, as follows:

Management Contingency Cash Flow

(in millions)

State Fiscal Years 2003 to 2006

SFY 2003	SFY 2004	SFY 2005	SFY 2006	Total
$123.5	$123.5	$123.5	$123.5	$494

The financing of the CA/T Project is heavily dependent on revenue from the sale of bonds by the Commonwealth of Massachusetts. We estimate that the project's current funding strategy, which runs counter to historical claims settlement experience, will require the Commonwealth to incur unnecessary borrowing costs of approximately $88 million to fund the $86 million excess Management Contingency capacity.

Conclusion

The CA/T Project has overestimated the amount needed to settle outstanding contractor claims by $86 million. Consequently, the total estimated cost of the project is overstated by this amount and will result in additional borrowing costs to the Commonwealth of approximately $88 million. We recognize that the primary purpose of the DRB Exposure component of the Management Contingency is to account for costs related to the settlement of outstanding contractor claims. However, the project's empirical data on the settlement of $2.9 billion in past contractor claims offers the best indicator of future needs and should be reflected in the establishment of the contingency budget.

Recommendation

To preclude the significant borrowing costs associated with the overfunding of the DRB Exposure component of its Management Contingency, CA/T Project management should forego funding $86 million of this component. Moreover, in preparing its upcoming CSU 9 Project budget, the CA/T Project should consider reducing the total estimated project cost by $86 million.

Auditee's Response

In response to our report, the Deputy Project Director stated, in part:

> *We are currently engaged in the completion of our Cost/Schedule Update, Revision 9 (CSU9) process. Your comments regarding the CSU8 management contingency development will be taken into consideration during our development of the CSU9 contingency value. . . . In addition, please note that the Project's funding strategy has always been to secure financing for project contingency only when the actual need is identified. When and if added financing is required for expenditure of contingency needs, the Project intends to secure such funding from sources other*

than additional state bond offerings, such as the sale of air rights or land development.

Auditor's Reply

We are gratified that our report's findings and recommendations will be considered in the CA/T project's development of the CSU9 Contingency update. We will monitor the project's full implementation of the recommendations during follow-up audits.

Regarding the project's comment relative to the funding of the contingency, according to page 39 of the project's 2001 Finance Plan, project officials will use state bond funding of $264 million to satisfy funding of the current $14.625 billion (as amended) project cost estimate between fiscal year 2003 and the end of the project in 2005. Included in the $14.625 billion budget is the $235 million for the DRB Exposure component of the Management Contingency. Our report recommends that the project not fund $86 million of the $235 million in DRB Exposure coverage, thus reducing bonding needs by that amount. Based on our audit results, the project should not fund the $86 million excess contingency and should consider reducing its total project cost estimate accordingly.

The project's response states that, if contingency funding is needed, the project plans to use proceeds from the sale of future air rights, land development, etc., to satisfy that need. However, as stated above, our review shows that funding $86 million of the $235 million DRB Exposure component of the Management Contingency (whether through the issuance of bonds or using the proceeds from the sale of air rights, land development, etc.) is unnecessary. By avoiding the issuance of $86 million in bonds, approximately $88 million in state borrowing costs would be saved. Similarly, by not using the proceeds from the sale of air rights, land development, etc., for that purpose, those funds instead could be used to pay down the existing bond debt or to pay other project costs, thus reducing the need to borrow $86 million of the planned $264 million in state borrowing costs discussed above. Under either funding approach, approximately $88 million in state borrowing costs could be avoided.

APPENDIX I

Management Contingency Budget Analysis

	Internal CA/T Project Characterization of Management Contingency*	Construction Contingency	Other Contingency	MTA Owner Contingency	Total
Contract Specific Contingency	$29,000,000	$11,000,000	$18,000,000	$0	$29,000,000
Market Discount Risk Contingency	12,000,000	12,000,000	0	0	12,000,000
Project Schedule Contingency	91,000,000	50,000,000	41,000,000	0	91,000,000
Dispute Review Board Exposure Contingency	235,000,000	235,000,000	0	0	235,000,000
External Factors Contingency	25,000,000	0	25,000,000	0	25,000,000
Modification Review Resources Contingency	5,000,000	0	5,000,000	0	5,000,000
Subtotal (Management Contingency under CA/T Control)	397,000,000	0	0	0	397,000,000
MTA CEO Contingency	97,000,000	0	0	97,000,000	97,000,000
Total Contingency	$494,000,000	$308,000,000	$89,000,000	$97,000,000	$494,000,000

* Categories Used in Project Management Monthly Report (PMMR) Presentations

APPENDIX II

Management Contingency Component Balances

As of March 31, 2002

(in millions)

	Beginning Balance	CSU 8 Activity	Balance at March 31, 2002
Contract Specific Contingency	$29.0	$6.0	$35.0
Market Discount Contingency	12.0	-3.0	9.0
Project Schedule Contingency	91.0	-41.3	49.7
DRB Exposure Contingency	235.0	-16.9	218.1
External Factors Contingency	25.0	-6.7	18.3
Modification Review Resources Contingency	5.0	-5.0	0.0
MTA CEO Contingency	97.0	-15.0	82.0
Total	$494.0	-$81.9	$412.1